

**TITLE OF THE INVENTION**

Composite French door

**FIELD OF THE INVENTION**

[0001] The present invention relates to French doors. More specifically, the present invention is concerned with a French door which production is achievable at a reduced cost, while providing pleasing aesthetics.

**BACKGROUND OF THE INVENTION**

[0002] French doors are well known and are used extensively in high priced houses.

[0003] These doors are generally expensive to manufacture since they are made of solid woods that must be carefully sanded and finished after assembly to yield a high-quality end product. Indeed, should the pieces be sanded and finished prior to the assembly of the door, even small variations in thickness are very noticeable to the naked human eye at the junction of the various pieces making the door.

[0004] Therefore there is a need in the art for a French door which production is achievable at a reduced cost, while providing pleasing aesthetics.

**SUMMARY OF THE INVENTION**

[0005] More specifically, in accordance with the present invention, there is provided a composite French door comprising a first and a second door stiles; a top transversal piece mounted between the first and the second door stiles; and a bottom transversal piece mounted between the first and the

second door stiles; wherein the first and second door stiles and the top and bottom transversal pieces include joining parts.

[0006] There is further provided a method for fabricating a composite door comprising the steps of cutting face pieces; cutting edge pieces; cutting spacers; assembling a first and a second face pieces to at least one edge piece into a blank door stile; assembling at least one spacer between two face pieces into a blank transverse piece; cutting a blank door stile into a door stile having a first joining part; cutting a blank transverse piece into a number of transverse pieces each having a second joining part; and assembling a first door stile and a second door stile to a first transverse piece and to a second transverse piece by mating the first joining parts to the second joining parts respectively.

[0007] It is to be understood that the term "composite" is to be construed as meaning any assembly of materials different from solid wood.

[0008] Other objects, advantages and features of the present invention will become more apparent upon reading of the following non-restrictive description of embodiments thereof, given by way of example only with reference to the accompanying drawings.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0009] In the appended drawings:

[0010] Figure 1 is a front view of a French door according to an embodiment of the present invention;

**[0011]** Figures 2A to 2E illustrate an assembly of a door stile used in the door of Figure 1;

**[0012]** Figures 3A to 3C illustrate an assembly of a number of door bottom transverse pieces used in the door of Figure 1;

**[0013]** Figures 3A to 3C illustrate the assembly and the cutting of a number of blank bottom transverse pieces used in the door of Figure 1;

**[0014]** Figures 4A to 4C illustrate the assembly and the cutting of a number of top transverse pieces used in the door of Figure 1;

**[0015]** Figures 5A and 5B illustrate a junction between a stile and a transversal piece in the door of Figure 1, according to an embodiment of the present invention;

**[0016]** Figures 6A and 6B illustrate a junction between a stile and a transversal piece in the door of Figure 1, according to a further embodiment of the present invention; and

**[0017]** 7 is a perspective view, partly in section, of a portion of the door of Figure 1.

#### **DESCRIPTION OF EMBODIMENTS OF THE INVENTION**

**[0018]** There is provided a French door made of generally hollow stiles and top and bottom transverse pieces, all having pre-finished faces, which yields reduced finishing costs and reduced material costs. Pieces of solid

wood are used at junctions between pieces of the door to allow for a conventional assembly of these pieces and to yield a conventional looking finished product.

**[0019]** Turning first to Figure 1 of the appended drawings, a French door according to an embodiment of the present invention will be generally described.

**[0020]** The door 10 comprises first and second door stiles 12 and 14, a top transverse piece 16 mounted between the stiles 12 and 14 and a bottom transverse piece 18 mounted between the stiles 12 and 14. The door 10 may comprises a number of glass panels 20 mounted between horizontal 22 and vertical 24 cross pieces.

**[0021]** Turning now to Figure 2A to 2E, the construction of a blank door stile (12 or 14) will be described.

**[0022]** In Figure 2A a first face piece 26 is provided and assembled with a first solid wood edge piece 28, via a wood adhesive for example.

**[0023]** A number of solid wood spacers 30-36 are adhered to an inside surface of the first face piece 26 (Figure 2B).

**[0024]** A second solid wood edge piece 38 may then be adhered to the first face piece 26 (Figure 2C).

**[0025]** In Figure 2D, a second face piece 40 is adhered to edge pieces 28 and 38 and to spacers 30-36 to yield a blank door stile (Figure 2E).

**[0026]** It is to be noted that the first edge piece 28, the second edge piece 38 and the number of spacers 30-36 may be provided as a unit and mounted adhesively in a sandwich-like manner between the first face piece 26 and the second face piece 40, for example.

**[0027]** The face pieces 26 and 40 may be made of solid wood or may be made of a laminate or any composite material. Similarly, the spacers may be made of solid wood or may be made of a laminate or any composite material for example.

**[0028]** A number and position of the spacers depend may vary depending on the type of desired door. Optionally, foam material may be provided between the spacers.

**[0029]** The resulting blank door stile is light-weighted.

**[0030]** Figure 3A to 3C illustrate the assembly and the cutting of a number of blank bottom transverse pieces 18.

**[0031]** In Figure 3A, spacers 42 and 44 and an edge piece 46 are adhered to and between two face pieces 48 and 50 to yield a full-length board 52. The full-length board 52 (see Figure 3B) may then be cut into a number of blank bottom transverse pieces 18 (see Figure 3C).

**[0032]** It is to be noted that the spacers 42 and 44 and the edge piece 46 may be provided as a unit and mounted adhesively in a sandwich-like manner between the two face pieces 48 and 50, for example.

**[0033]** Figure 4A to 4C illustrate the assembly and the cutting of a number of blank top transverse pieces 16.

**[0034]** In Figure 4A, a spacer 54 and an edge piece 56 are adhered to and between two face pieces 58 and 60, to yield a full-length board 62. The full-length board 62 (see Figure 4B) may then be cut into a number of blank top transverse pieces 16 (see Figure 4C).

**[0035]** It is to be noted that the spacer 54 and the edge piece 56 may be provided as a unit and mounted adhesively in a sandwich-like manner between the two face pieces 58 and 60, for example.

**[0036]** Once the blanks of the different elements of the door are made as described hereinabove, each blank is cut so as to yield a corresponding finished element.

**[0037]** For example, a blank door stile is cut so as to shape the edge piece 28 into a joining edge 28 as illustrated in Figure 5A, and so as to bevel the faces 26 and 40 thereof, thereby yielding a finished door stile 12 as a unitary piece having a joining part. A blank bottom transverse piece is cut so as to shape the spacer 42 thereof into a joining spacer 42 illustrated in Figure 5A having a shape mating the shape of the joining edge 28, and so as to bevel the faces 48 and 50, thereby yielding a finished bottom transverse piece 18 as a unitary piece having a joining part.

**[0038]** Figures 5A and 5B illustrate a junction between such a finished door stile 12 and a finished transversal piece 18.

**[0039]** As may be seen from these Figures, the faces 26 and 40 of the finished door stile 12, as well as the faces 48 and 50 of the finished transversal piece 18 are bevelled (see angles 64) and create a V-shape notch. In this example, the bevelled pieces create a sixty degree angle 66 (see Figure 5B). Such an angle allows for a slight misalignment of outer surfaces of the faces 26, 40, 48 and 50. Indeed, it has been found that the eye is fooled by this V-shape notch between adjacent surfaces.

**[0040]** In Figures 6A and 6B, the faces of the finished door stile and the faces of the finished transversal piece are so bevelled (angles 68) so that a ninety (90) degree angle (see angle 70 in Figure 6B) is formed when these pieces are assembled, via an adhesive for example.

**[0041]** Figure 7 illustrates, in a partly sectional view, the assembly of the various finished pieces described hereinabove into a French door according to the present invention.

**[0042]** As will be understood by one skilled in the art, even though the French door 10 illustrated in the appended drawings is provided with a number of glass panels 20, other style of French doors, with or without glass panels, may be fabricated according to the present invention.

**[0043]** Although the present invention has been described hereinabove by way of embodiments thereof, it may be modified, without departing from the nature and teachings of the subject invention as defined in the appended claims.